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Studies of domain morphology in segmented polyurethanes by pulsed NMR

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Abstract

A new technique based on the Goldman-Shen pulse sequence with varying preparation interval is proposed for the study of domain morphology of segmented polyurethanes. The results of numerical calculations of the magnetization recovery in different models of domain morphology show that the method provides new information about the domain morphology which is beyond the reach of the conventional Goldman-Shen experiment. A close agreement of the theoretical predictions with the experimental data on samples of segmented polyurethanes with a fixed molecular mass of the hard blocks and variable molecular mass of the soft blocks reinforces the above statement. The resulting structural parameters obtained by this new NMR technique are compared with the data from the small-angle X-ray scattering (SAXS) method.

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Keywords

Morphology, Nuclear magnetic resonance, Segmented polyurethane, Spin diffusion